MITSUBISHI ELECTRIC

QA65B/QA68B Extension Base Unit

User's Manual

Thank you for purchasing the Mitsubishi programmable controller MELSEC-Q series.

Prior to use, please read this and relevant manuals thorougly to fully understand the product.

MELSEC-Q
Mitsubishi Programmable Controller

MODEL	QA65B-U
MODEL CODE	13JT32
IB(NA)-0800157-E(1509)MEE	

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REVISIONS

*The manual number is given on the bottom right of the cover.

Print date	*Manual number	Revision
September 2015	IB(NA)-0800157-E	Combine the Japanese manual (IB-0800157) with the English manual (IB-0800158).

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1. OVERVIEW

1.1 Overview

This User's Manual describes the specifications, configuration devices, names and settings of each part, and mounting and installation of the QA65□B extension base unit, QA68B extension base unit (hereinafter, QA6□B).

Refer to the QCPU User's Manual(Hardware Design, Maintenance and Inspection) SH-080483ENG enclosed with the main base unit for the matters not described in this manual, such as the QA6□B safety precautions and general specifications.

1.2 Included Parts

This section describes parts included with this module.

Product	Type	Quantity
Extension base unit	QA6□B	1
I/O number seal	—	1
This manual	—	1

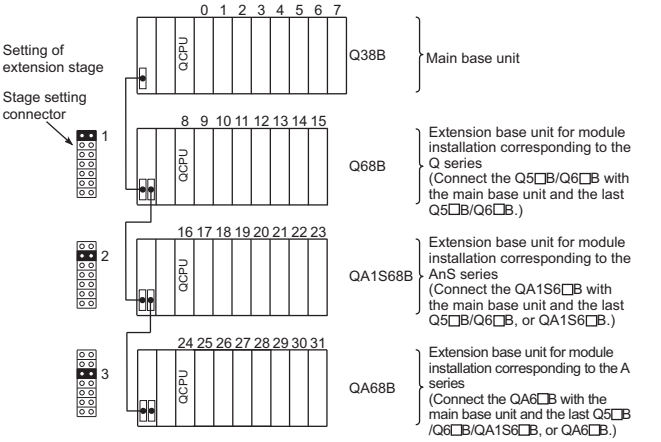
2. SYSTEM CONFIGURATION

2.1 System Configuration

The system configuration and precautions for using the QA6□B extension base unit are described in this section.

(1) Extension base unit connection order
When using the Q5□B/Q6□B, QA1S6□B and QA6□B together, connect from the unit closest to the main base unit in the order of Q5□B/Q6□B, QA1S6□B and QA6□B.

(2) Setting order of the expansion stage numbers for expansion base units
Expansion base units require the setting of the expansion stage numbers (1 to 7) using the stage setting connector.
Assign the expansion stage numbers starting from 1 to 7 to the expansion base units counting from the one which is connected to the main base unit.


0 1 2 3 4 5 6 7
Setting of extension stage
Stage setting connector
QCPU
Q38B
Main base unit
1
8 9 10 11 12 13 14 15
Q68B
Extension base unit for module installation corresponding to the Q series
(Connect the Q5□B/Q6□B with the main base unit and the last Q5□B/Q6□B.)
2
16 17 18 19 20 21 22 23
QA1S68B
Extension base unit for module installation corresponding to the AnS series
(Connect the QA1S6□B with the main base unit and the last Q5□B/Q6□B, or QA1S6□B.)
3
24 25 26 27 28 29 30 31
QA68B
Extension base unit for module installation corresponding to the A series
(Connect the QA6□B with the main base unit and the last Q5□B /Q6□B/QA1S6□B, or QA6□B.)

2.2 List of configuration devices

The following table lists the mountable modules on the QA6□B extension base unit.

Module	Type	Remarks
Power module	A61P, A61PN, A62P, A63P, A68P, A61PEU, A62PEU	—
Input module	AX10, AX11, AX11EU, AX20, AX21, AX21EU, AX31, AX31-S1, AX40, AX41, AX41-S1, AX42, AX42-S1, AX50-S1, AX60-S1, AX70, AX71, AX80, AX80E, AX81, AX81-S1, AX81-S2, AX81-S3, AX81B, AX82	—
Output module	AY10, AY10A, AY11, AY11A, AY11E, AY11AEU, AY11EEU, AY13, AY13E, AY13EU, AY15EU, AY22, AY23, AY40, AY40A, AY41, AY42, AY42-S1, AY42-S2, AY42-S3, AY42-S4, AY50, AY51, AY51-S1, AY60, AY60S, AY60E, AY70, AY71, AY72, AY80, AY81, AY82EP	—
I/O module	A42XY, AH42	—
High-speed counter module	AD61, AD61S1	*1
Analog-digital conversion module	A68AD, A68AD-S2, A68ADN, A616AD	—
Digital-analog conversion module	A62DA, A62DA-S1, A68DAV, A68DAI-S1, A616DAV, A616DAI	—
Temperature-digital conversion module	A68RD3, A68RD3N, A68RD4, A68RD4N, A616TD, A60MX, A60MXR, A60MXRN, A60MXT, A60MXTN	—
Interrupt module	AI61, AI61-S1	*2
Positioning module	AD70, AD70D, AD71, AD71S1, AD71S2, AD71S7, AD72	—
	AD75P1-S3, AD75P2-S3, AD75P3-S3, AD75M1, AD75M2, AD75M3	*1
MELSECNET/MINI-S3 master module	AJ71PT32-S3, AJ71T32-S3	*1
Intelligent communication module	AD51, AD51E, AD51H, AD51-S3, AD51E-S3, AD51H-S3	*2
PC fault detection module	AS91	—
MELSEC-I/OLINK module	AJ51T64	—
B/NET module	AJ71B62-S3	—
Blanking module	AG60	—
Dummy module	AG62	—
A-A1S conversion adapter	A1ADP-XY, A1ADP-SP	*3

*1 The dedicated commands used in the QnA and A Series program cannot be used with the Q mode CPU.
Replace these with FROM/TO commands.
*2 There is a limit to the number of mountable modules.

Module	Type	number of mountable
Intelligent communication module	AD51, AD51E, AD51-S3, AD51E-S3, AD51H, AD51H-S3	6 *4
Interrupt module	AI61, AI61-S1	1 *5

*3 The AnS series modules (equivalent ones to the modules listed in the table) also can be used by using the A-A1S conversion adapter.
(Example: A68AD → A1S68AD)
For precautions on the module replacement, refer to the manual for the A-A1S conversion adapter.
*4 In combined use of the QA1S6 B and QA6 B, up to 6 intelligent communication modules can be installed.
*5 Only one interrupt module is valid which can be chosen from QI60, A1SI61, AI61 or AI61-S1.

3. SPECIFICATIONS

The QA6□B performance specifications are given below.

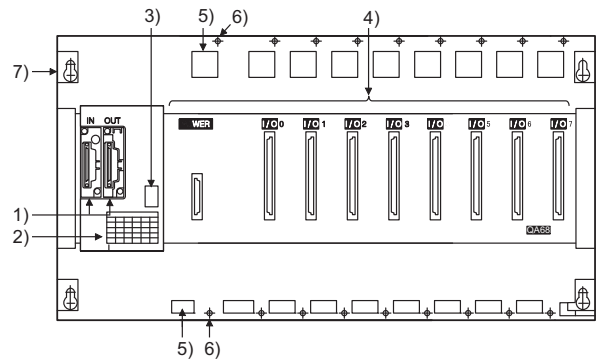
Item	Type	
	QA65B	QA68B
Number of I/O modules connected	5	8
Applicable modules	A series module	
5VDC internal current consumption	0.117A	0.117A
Weight	1.60kg	2.00kg

4. PART NAMES AND SETTING

The names of and settings for each QA6□B part are explained in this section.

4.1 Part Names

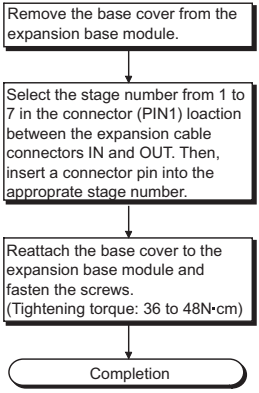
The names of each QA6□B part are explained below.

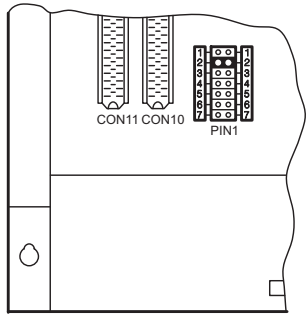


No.	Name	Application
1)	Expansion cable connector	A connector for signal transmission with the basic base module or the other expansion base module. Connects the expansion cable. Do not remove the supplied connector cover.
2)	Base cover	PCB surface protection cover.
3)	Stage number setting connector	A used to set the stage numbers of the expansion base modules. Refer to section 4.2 for the setting procedure.
4)	Module connector	Connector for mounting power supply unit, input/output unit and special function module. Mount the dustproof connector cover, blank cover unit (AG60) or dummy unit (AG62) on the connector in the spare spaces with module connected.
5)	Module fixing hole	Cut out to accept projection and hook at rear of modules.
6)	Screw hole for fastening modules	A screw hole used for fastening a module to the base. (M4 screw)
7)	Base module installation hole	A hole used for mounting the base module to a panel such as a control panel.

4.2 Extension Stage Number Setting

The method of setting the QA6□B stages is explained below.


Remove the base cover from the expansion base module.
Select the stage number from 1 to 7 in the connector (PIN1) loaction between the expansion cable connectors IN and OUT. Then, insert a connector pin into the approprate stage number.
Reattach the base cover to the expansion base module and fasten the screws.
(Tightening torque: 36 to 48N·cm)
Completion



Stage number setting for expansion base modules

	Extension stage number setting						
	1st stage	2nd stage	3rd stage	4th stage	5th stage	6th stage	7th stage
Stage number setting connector setting	PIN1	PIN1	PIN1	PIN1	PIN1	PIN1	PIN1

POINT

(1) To set the stage number setting connector, select the appropriate number from 1 through 7 in ascending order according to the number of expansion modules.
(2) Do not assign the same stage number to several modules or skip any stage numbers. Otherwise, improper I/O operation results.
(3) The expansion stage number is factory-set to 1.

5. MOUNTING AND INSTALLATION

5.1 Module Installation

This section describes the precautions to handle the CPU, I/O, special function, power supply, and base module.

(1) Do not drop or apply a strong impact to the module housing, memory card, terminal block connectors, and pin connectors.

(2) Do not remove the PC board of the modules from housing. Otherwise, malfunctions may result.

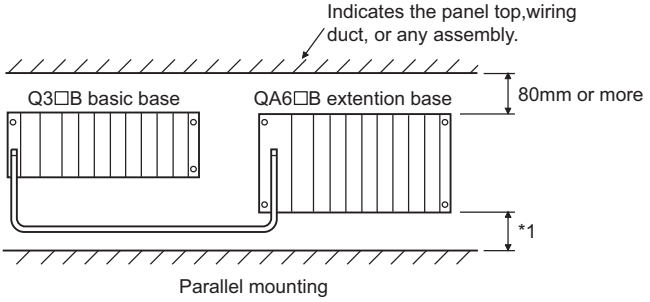
(3) When using the expansion base module QA6 B, be sure to install the power supply module.
Although the module may work without the power supply module under light load, stable operation is not guaranteed.

(4) Limit the tightening torque for the module installation screws and terminal block screws within the following range:

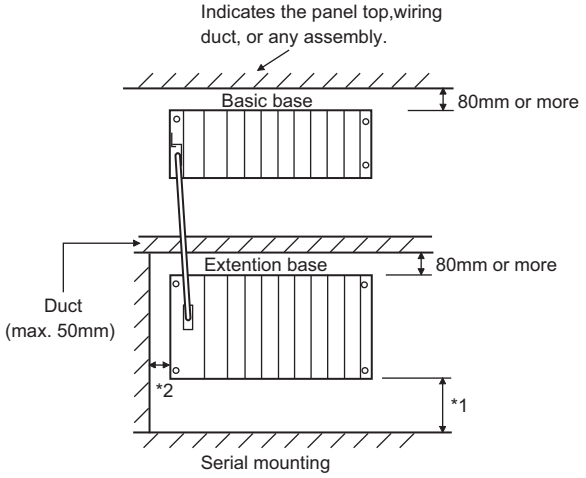
Location of screw	Tightening torque range
I/O module terminal block installation screw (M3)	36 to 48 N•cm
A series module installation screw (M4)	78 to 118 N•cm
I/O module terminal screw (M4)	
Power supply module terminal screw (M4)	98 to 137 N•cm

5.2 Precautions for installing base unit

(1) Unit installation position



Parallel mounting

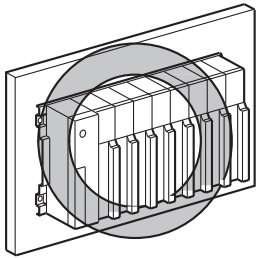


Serial mounting

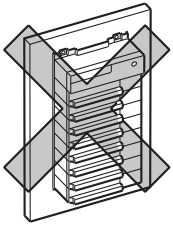
*1 When link module is not used : 50mm or more
When using ϕ4.5mm optical fiber cable : 100mm or more
When using a coaxial cable : 100mm or more
When using ϕ8.5mm optical fiber cable : 130mm or more
*2 20mm or more when connecting extension cable without removing adjacent modules.

(2) Module installing position

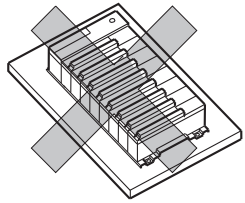
(a) Install the PC in the following position to ensure ventilation for heat radiation.



(b) Do not install the PC in the following positions.



Vertical position

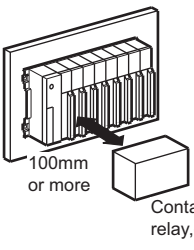


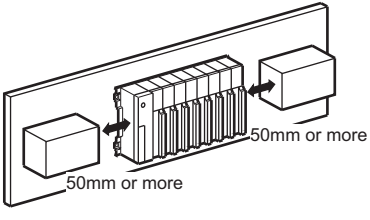
Horizontal position

(3) Install the base module on a flat surface.
When the base module is installed on an uneven surface, the PC board may be strained, resulting in malfunction.

(4) Do not install the PC close to a vibration source such as a large electromagnetic contactor or no-fuse breaker. Install the PC to the separate panel or isolate it as far as possible.

(5) Provide the following distances between the PC and devices (contactor or relay) to avoid the influence of radiation noise or heat.
- Device installed in front of the PC: 100mm or more
- Device installed on either side of the PC: 50mm or more

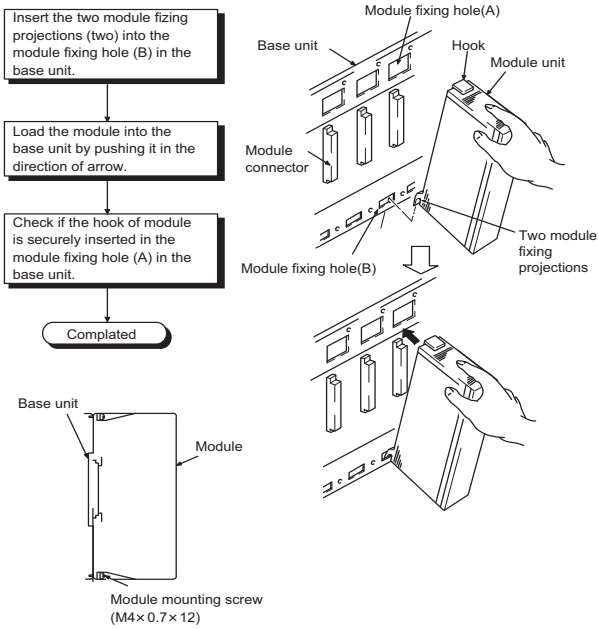




5.3 Installation and removal of modules

This section explains the installation and removal procedures of the power supply module, CPU module, I/O module, special function module, etc to and from the base unit.

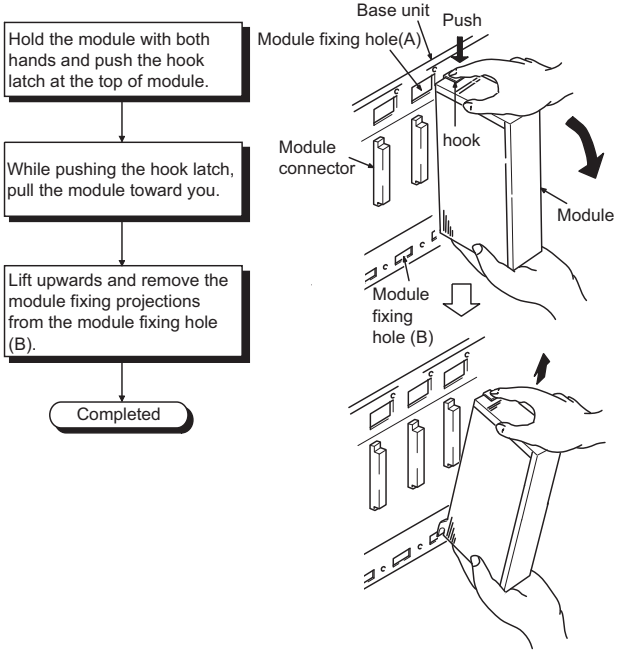
(1) Installation of module


Insert the two module fizing projections (two) into the module fixing hole (B) in the base unit.
Load the module into the base unit by pushing it in the direction of arrow.
Check if the hook of module is securely inserted in the module fixing hole (A) in the base unit.
Complated
Module fixing hole(A)
Base unit
Hook
Module unit
Module connector
Two module fixing projections
Module fixing hole(B)
Base unit
Module
Module mounting screw
(M4×0.7×12)

POINT

(1) To fix the module, be sure to insert the module fixing projection into the module fixing hole (B). If the module is forcibly fixed without insertion, the pins in the module connector may be bent or damaged.
(2) When the base unit is used at locations where there are especially large vibration and/or shock, screw the module to the base.

(2) Removal of module


Hold the module with both hands and push the hook latch at the top of module.
While pushing the hook latch, pull the module toward you.
Lift upwards and remove the module fixing projections from the module fixing hole (B).
Completed
Base unit
Push
Module fixing hole(A)
hook
Module connector
Module
Module fixing hole (B)

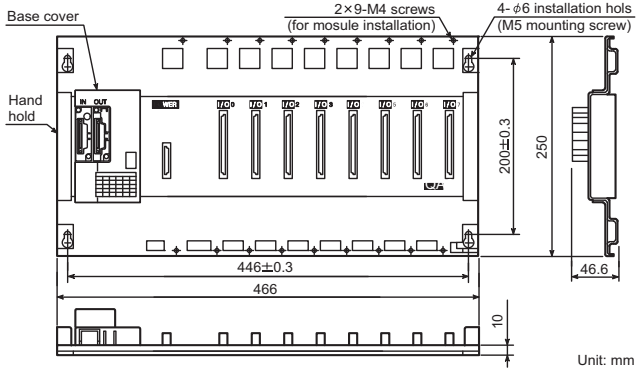
POINT

To remove the module, be sure to disengage the hook from the module fixing hole (A) and then remove the module fixing projections from the module fixing hole (B). If the module is forcibly removed, the hook or module fixing projections will be damaged.

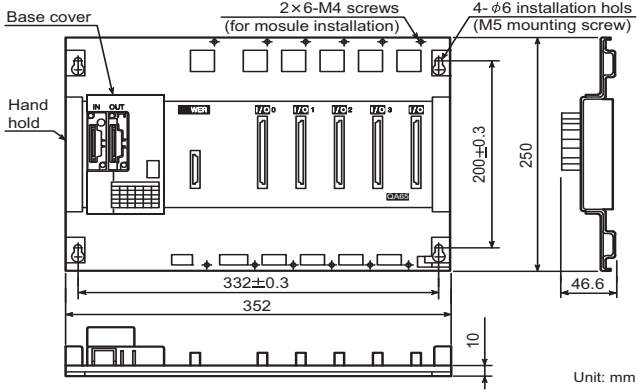
6. EXTERNAL DIMENSIONS

The external dimensions of the QA6□B are shown below.

(1) The external dimensions of the QA68B



(2) The external dimensions of the QA65B



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